

6WI

# AMATEUR RADIO



Published in the interests of Amateur Radio  
by the W.I.A. (Vic. Div.), Official Organ  
of all divisions of the W.I.A., A.R.A.  
(N.S.W.) and the R.A.A.F. Wireless Reserve.



PRICE

6D

FEBRUARY, 1935

## Amateur Radio

### HICKOK METERS

Veall's, Melbourne, wish to advise all amateurs that they have now been appointed Sole Distributors for Hickok Meters. As the above are obtainable in a very wide range at moderate prices, these should prove of great interest to amateurs and radio constructors. Veall's mail order department will be pleased to supply any further particulars or advice should same be required.

The several models of D.C. and A.C. instruments embody advanced principles in instrument engineering in both external appearance and features of movement construction. The cases are of moulded bakelite, and all of the several models are of the same general design. All of the three case sizes therefore harmonize when mounted on the same apparatus. The movements employed are of the following types: Permanent Magnet or D'Arsonval used in D.C. type, also in Thermo and Rectifier type A.C.; Dynamometer type and Magnetic Vane for A.C. only. These several movements embody many new and improved features.

The D.C. meters containing D'Arsonval movements are supplied as Voltmeters with a standard resistance of approximately 100 ohms per volt. Special high resistance types are supplied with a full scale sensitivity of three-quarters of one milliampere and a resistance of 1333 ohms per volt. The design of D'Arsonval type move-

ments is a New Type and covered by Patents. The entire frame work of this movement is cast in one piece, a construction which is extremely rigid, resulting in the highest possible continuation of meter accuracy.

The model 47 A.C. Dynamometer Meters are the smallest type made with Dynamometer movements. The Dynamometer movement has many advantages over the ordinary iron vane type as it is correct on all commercial frequencies up to 5000 cycles, has great durability and wearing qualities.

The Magnetic Vane Movements used represent a new development in this type of indicating instrument. A magnetic alloy is used for the actuating members which has a nearly zero hysteresis loss and zero magnetic remanence. New features of construction combined with superior magnetic material result in an exceptionally accurate instrument with almost D.C. scale characteristics. Scales are readable at 1/10th full scale value.

**SUPPORT  
YOUR  
ADVERTISERS**

## ARE YOU A MEMBER?

Subscriptions to the W.I.A. (Victorian Division) are as under:—

Full Member, 20/-. Associate Member, 16/-  
Country—Full Member, 14/6; Associate Member, 8/9  
Student Member, 7/6. Entrance Fee, 2/6

Write to Secretary, Law Court Chambers, 191 Queen St., City

# AMATEUR RADIO

Published by the Wireless Institute of Aust., Victorian Division.

---

Vol. 3. No. 2

1st. February, 1935

---

## INDEX

Page.	Page.		
Editorial .....	3	Victorian QSL Bureau .....	16
Lattice Masts .....	4	Divisional Notes:	
The 77 Tube in High Fidelity		A.R.A. ....	17
Speech Amplifier .....	6	VK3—	
Station Description VK3ML .....	7	Key Section Notes .....	19
Fisk Trophy Competition .....	8	Phone Section Notes .....	19
Modern Monitoring .....	9	VK6 .....	20
Electron Coupled Detectors .....	10	VK7 .....	20
Aerials .....	12	R.A.A.F Notes .....	23
Operating and Experimental		VK2 .....	17
Section .....	15	VK4 .....	18

---

## WIRELESS INSTITUTE OF AUSTRALIA.

### OFFICE-BEARERS:

#### Federal Headquarters: Adelaide

#### Victorian Division

##### President:

P. BOWMAN (VK5PM)

##### Patron:

CAPT A. E. PAYNE (VK3PP)

##### Secretary:

E. A. BARBIER (VK5MD)

##### President:

H. KINNEAR (VK3KN)

##### Treasurer:

R. D. ELLIOTT (VK5RD)

##### Secretary:

R. ANDERSON (VK3WY)

##### Traffic Manager:

M. GRAY (VK5SU)

##### Treasurer:

J. G. MARSLAND (VK3NY)

##### Publicity Officer:

G. B. RAGLESS (VK5GR)

##### Traffic Manager:

R. H. CUNNINGHAM (VK3ML)

### Magazine Committee:

H. KINNEAR (VK3KN),

V. MARSHALL (VK3UK), L. MONCUR (VK3LN) Distribution,  
W. R. GRONOW (VK3WG), J. MARSLAND (VK3NY) Secretary,  
R. H. CUNNINGHAM (VK3ML) Technical.

All Communications and MSS. should be forwarded to the Editor, "Amateur Radio," Box 2, P.O.,  
South Melbourne.

Subscription to "Amateur Radio" is 8/- per Annum (Post Free), paid in advance.

Should you not receive your Copy of "Amateur Radio," notify your Divisional Secretary at once.

Advertising and Publishing Office: Address Publicity Manager, "Amateur Radio", 126 Whit horse Rd.,  
Box Hill, E11. Phone: WX 2429



Don't let your Bottles be Stoves  
Make them Ether Busters  
with  
Westinghouse  
Instruments

Do you want to know if your tubes are putting out more watts in heat than in power? Or why that 47 that works FB on 40 won't perk on 20? Or why the output went up when you changed the self-biasing grid leak on one stage, whereas the same change in the high freq. stage made it go haywire? Or why the stage you "neutered" with the flash light lamp goes crazy when you put the juice on it?

All these questions can be answered easily by a couple of Westinghouse low-current-range types, MX or NX, d-c. instruments in the plate and grid circuits of an amplifier or doubler stage.

To help you in applying these instruments to your Xmitter, Westinghouse has printed a new folder that explains the meaning of the indications given by instruments in the plate and grid circuits, and points out what to do to get the best possible results from your equipment.

The information in this folder will help the brasspounder keep his amplifier and doubler stages on the straight and narrow, and make the old junk pile deliver more miles per watt, with the minimum waste of power to heat the shack. Send the coupon or a post card for your copy.

If you haven't a copy of our Catalog 43-340 on MX and NX Instruments, ask for it, too. It gives description and listing of a complete line of moderately-priced radio instruments for panel mounting.

ALAN S. DUKE, Pty. Ltd.

486 BOURKE STREET, MELBOURNE, C.1

Please send me the booklets checked below:—

F8315 The use of Westinghouse Instruments in Amplifier & Doubler Stages  
Catalog 43-340—Types MX and NX Instruments.

Name

Address

City

State

Call Letters



## Editorial . . . .

---

It is great fun turning out a magazine. From the 18th of one month, when the copy goes to press, it seems like a few days till the 18th of the next month. We all know that time passes quickest when we have lots to do, and many things to worry our minds; and our little worries, although they seem naught to many, certainly occupy our time. Do you know that we sometimes have to squeeze articles from chaps, so that you will have a "presentable" magazine? When "Amateur Radio" was born, we had a really fat technical file, and a fair sprinkling of station descriptions; but now that file is flat, practically, and one of our "little" worries is to get that file filled. Is THAT what you would expect from your brother hams if YOU were running this mag.? Wouldn't you feel that it wouldn't take a minute to run off a station description, or some technical article, and send it along? Perhaps you would learn to realise, just as we have, that many hams are modest—too modest, in fact. They are by no means to be blamed for that, of course. It is only natural that a few are inclined towards writing, and many others, although they would like to do so, just

feel that they have not the ability, or, perhaps, feel that their grammar or technical details might not be quite correct. The dyed-in-the-wool ham is possibly rather sensitive towards displaying a little of his knowledge for fear that some person, armed with a slide rule and a ream of paper, may slay him in his sleep for his actions. For heaven's sake rid yourself of that idea. "Amateur Radio" has set itself a standard to live up to, and naturally all the stuff that goes into it must be good. If a contribution is not up to scratch, we do our best to get it into shape, or make suggestions to the author; then, 99 cases out of 100, it is published. We want constructional articles more than ever. You could write up your transmitter, receiver, modulation equipment, or whatever you desire, and call it anything you like. Even if your article was of great interest to only one man, then just think what you have done for him, and amateur radio all round. We all know that old saying:—"There are two reasons why a chap is in the amateur radio game: firstly, for what he can get out of it; and secondly, for what he can put into it."

---

### QUARTZ CRYSTALS

Every Crystal tested to 50 watts input to Pentode Crystal Oscillator  
Accurate grinding to .03 per cent. 3.5 M.C., 20/-; 7 M.C., 30/-  
100 K.C. Xtals. 465 K.C. Xtal "Gates. Prices on application

PROMPT DELIVERIES

MAXWELL HOWDEN (VK3BQ) CONS. RADIO ENGR.  
13 Balwyn Road, Canterbury, E.7.

## Lattice Masts

---

By Frank Brandon, VK5FB.

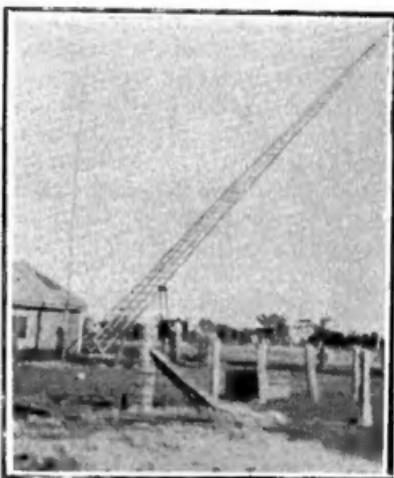
Not very much is written these days on the construction of masts for amateur use, in spite of the fact that a good high aerial is certainly of no secondary importance. Perhaps, if more spare cash were spent on a decent mast, less would be required at the RF end of the works. The higher and better the aerial, the less watts one needs to get that precious DX. Several minor considerations, such as expense, space available, and ability to erect a man-sized pole, may often frighten one away from the trying to realise a dream of possessing a half wave vertical sky wire. This article will show that none of these hazards really exist. The mast at VK5FB is 104 feet high, and has withstood very severe gales during the past few years.

Although the details here are for this 104 footer, the main idea of the article is to show the construction of lattice masts, whether they be 10 or 100 feet high.

The timber used in our mast consisted of 8 pieces of 2 in. x 2 in. Oregon 40 feet long, and 4 pieces of 1½ in. x 1½ in. Oregon 24 feet long. This material formed the uprights—the 1½ x 1½ section extended from the 80 to the 104 ft. mark. Several hundred feet of 1 in. x 1 in. Oregon were used as the stays or struts. The cross arm consists of 2 pieces of 3 in. x 1 in. Oregon 16 ft. long, with ends bolted together, and the middle opened up and held apart by several pieces of the 1 in. x 1 in. timber.

The whole mast was constructed on the ground by laying the timber out on a level patch. All the joints of the uprights were made by butting two 40 ft. lengths of 2 in. x 2 in. together, and placing an 18 in. x 2 in. x ½ in. steel plate each side of the timber, and bolting through with 1 in. bolts. When this was completed, a 24 ft. length of 1½ in. x 1½ in. was placed on the end, and bolted into position in the same manner. After these operations were repeated four times, the four uprights were ready

to be stayed or struttied together; so a start was made on one side. Two of the 104 ft. lengths were laid out on the ground, and spaced 26 inches apart at the bottom end, and 4 inches apart of the other, which was to be the top of the mast. Then straps of

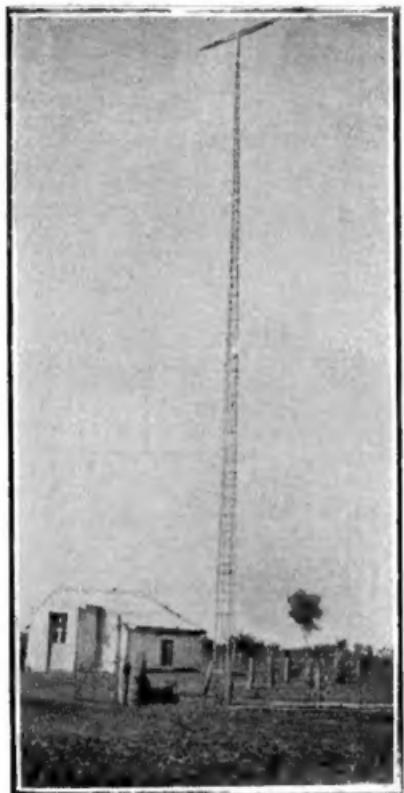


Raising the Mast

the 1 in. x 1 in. timber were nailed across at intervals of 2 feet over the entire length, and then a second stay was nailed angle-wise, as from the left of number 1 cross stay to the right of number 2 stay, and from the right of number 2 to the left of number 3 stay, and so on right to the other end.

The other side was constructed in a similar manner, and then the two sides were stood on their edges, with one end spaced 26 in. apart, and the other the usual 4 in., and then the staying process followed first on one side, and then, after temporarily nailing struts across the side on the ground, the whole job was turned upside down in order to complete the fourth side. A solid block of wood was then inserted into the small, or top end, and all the timbers were firmly bolted together. This is very im-

portant, as it makes it practically impossible for such a mast to be bent. The cross arm was fastened by utilising two steel plates, bent to right-angles, bolted and bracketed on. A pulley with cotton tape was fastened on each end of the 16 ft. cross arm, as well as down the centre of the mast.



The Finished Job

A light angle iron frame was next riveted together for the base. This was hinged to anchors let in the concrete bed, on which the mast was to stand. The base frame consisted of angle iron extending up each leg of the mast a couple of feet, and terminating in a square frame, so as to give the legs extra strength during erection, and also to try and prevent the white ants from eating the legs away!

The work of erecting this mast was carried out by six men in as many minutes. Fig. 1 depicts the mast, "A,"

lying on the ground, with the base in position on the concrete bed base, "B". "C" and "D" indicate the ground level. Two wires are tied on the mast at some point fairly well up, as at "E". These are run down to, and tied tightly to, posts "F" and "G". These wires "EF" and "EG" must be pulled tight, and tied at the same distance above the ground, opposite one another, in line with the base of the mast. These wires are not touched again until the stick is safely in position. With these wires thus secured, all the energy can be spent in raising the stick by pushing up with ladders, etc. If the mast is a high one, the use of a jury mast is essential, and consists of a pole erected close to the butt of the mast. A "V" or "U" is formed on the top of this pole, and the ropes that are to be used to haul up the mast are passed through this "V" or "U," and when pulled by the men on the ground, they actually lift the mast. The back stays can be measured out and tied to prevent the mast going over past the vertical position. The side wires, "EF" and "EG," prevent the mast swinging around or yawing, which is a bad habit they have around the 45 degree mark! To find the length of any guy wire to the smallest part of an inch, the following trigonometrical formula can be used, and should save many worries of finding a deficiency of one foot when a 100 ft. stick is half way up!

Length of guy =  $\sqrt{A^2 + B^2}$   
where "A" equals the distance up the mast from the base to where the guy is to be affixed. "B" is the distance from the pole base to the stay post, measured along the ground.

For example: If the guy is to be taken from 80 feet up, and the stay post is 60 feet from the base of the pole, then the length of guy wire needed will be

$$\sqrt{(80)^2 + (60)^2} = \sqrt{6400 + 3600} = \sqrt{10,000} = 100 \text{ feet.}$$

With three sets of guys, this mast is very solid, and we often go up 90 feet or so to make observations!

# The 77 Tube in High Fidelity Speech Amplifier

By VK3ZX

To attain high fidelity telephony, the speech and gramo amplifier must be of correct design. But to arrive at this end, expensive transformers and attenuators are usually necessary. The arrival of the 77 type tubes opened the field for a higher gain and better quality resistance coupled amplifier, the most attractive point being the low cost of material. The 77 tube is the 6-volt replica of the 57 tube,

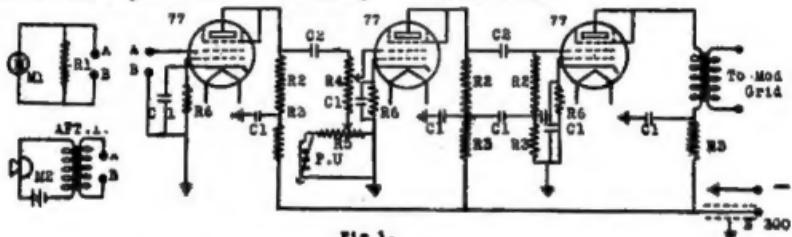


Fig. 1.

R1 5 megohms  
 R2 100,000 ohm 1 watt  
 R3 10,000 ohm 1 watt  
 R4 100,000 ohm Variable.  
 R5 10,000 ohm do.  
 R6 2000 ohm wire wound  
 and adjustable.

C1 0.1 to 1 mfd.  
 C2 8 mfd  
 M1 crystal mike  
 M2 carbon mike  
 AFT1 Mike transformer  
 AFT2 1 to 1 output transformer.

and when the screen grid is tied to the plate, and the suppressor to the cathode, you have a high a/u triode, with an amplification factor of approx. 19, and an impedance of 10,000

On account of the grid being brought out of the top of the valve envelope, trouble is brought to a minimum, and very short shielded leads can be run to the panel for mike and fader connections.

Photographs of the original amplifier are not included, as the same manufacturer of parts may not be procurable. To reduce feed back troubles, complete shielding is essential. A very convenient method of assembly is to build the parts on a metal chassis of approx. 7 in. x 8 in. x 2 in., and slide it into a square aluminum can; the front of the can is covered with ebonite, on which the controls, switches, and terminals are mounted. The valves are shielded with cans, and all grid wires kept to the top section of the chassis.

## Fading and Mixing System.

The fader and mixer is quite original, and is very inexpensive to include. Fig. 2 shows the hook up. When the mike is in use, pot arm of R4 is turned to position A, with R5 at D. For pick-up use, R5 is turned to position C, and R4 to B. For mixing speech and music, adjust R4 and R5 to the position where the correct level of each is reached.

The power supply should deliver from 300 to 350 volts, and should be placed at least 3 feet from the amplifier. Shielded wires on the power supply are essential.

Two types of mike connections are shown in Fig. 1. Connections are lettered.

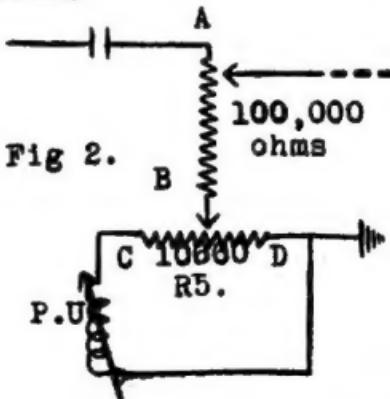


Fig. 2.

## Station Description

---

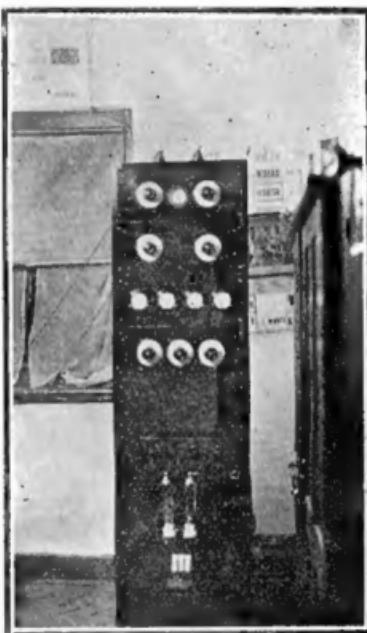
VK3ML.

Experimental work at this station dates back to 1921, in the days of crystal detectors, spark transmitters, and a few splashes of static. Since then, things have grown considerably, as everywhere else, until to-day the "works" consist of a 100 watt crystal-controlled transmitter and a single signal superhet receiver.

The transmitter has few unconventional gadgets, owing to some of the stunt circuits, such as the harmonic oscillator, link coupling, etc., having developed into more or less standard practice. Much work was done on a breadboard layout before the final effort, as shown in the photo., was decided upon. Three stages were incorporated in the relay rack job, the first being the crystal stage, using a Mazda AC/PEN as harmonic oscillator (which has given way to a type 42), two TCO4/10s in parallel as first amplifier, which in turn drive the QB2/75 as the link coupled final amplifier. Three power supplies are employed—a 400 volt unit rectified by a 280, a 700 volt pack using a 1072 fullwave tube, and an 1800 volt supply rectified by two 1762's, shown mounted on the lower front panel. All units are sufficiently smoothed with 8 microfarads each, and the necessary swinging chokes. Batteries are preferred as bias supply, in order to overcome voltage building-up difficulties, as in rectified bias supplies, and the misleading results therefrom. 'Phone has not been installed in the new transmitter, but plans are being drawn up for the incorporation of Class A prime modulation. With the three stages and the one 3.5 mc crystal, outputs from 100 to 150 watts can be obtained on frequencies from 3.5 to 28 mc.

Roughly describing the photo. of the transmitter, it will be observed that the two top dials and meter are the aerial tuning condensers and meter. The next panel lower down is the final amplifier stage with the grid and plate condenser dials in front. Four meters mounted on the middle

panel are the C.O., 1st amp. plate and final amp. grid, and plate current meters respectively. The two lower powered stages are tuned by the condensers appearing beneath the meters. The whole of the power supplies occupy the lowest and largest panel,



all being mounted on shelves behind. For mobility, the outfit is mounted on castors, and could be operated anywhere there is 200-240 volts A.C. to be had.

Practically every aerial invented has been tried, with varying success. It has been found that just about anything made of copper and suspended from the 40 foot poles will get through to U.S.A., owing to the station's locality being on the side of a hill that makes a perfect reflector for 7 mc. However, reliable contact has never been obtained with Europe with any type of aerial, and it looks as

Continued on page 14

# Fisk Trophy Competition

---

## RESULTS OF 6 POINT RELAY

The results of the third contest (six point relay) of the competition are shown by the tables below, and it will be seen that Victoria has regained the trophy from Queensland, after a close fight with South Australia.

The entries were not as numerous as was anticipated, probably because summer conditions are not popular for heavy operating periods. Several competitors commented unfavorably on the period chosen for the contest, but Federal Executive wish to point out that the rules governing the contests state that they must take place at intervals of about six months. The last contest (QRP) was held in June, and since then numerous requests were made for a relay contest, and although we knew unfavorable conditions would probably prevail it would be necessary for the contest to be held in mid-summer. With the BERU contest during February and ARRL during part of March, we would have to wait until April, which was considered too long.

Practically every entrant favorably commented upon the rules, and all agreed that they gave every State an equal chance. Although it was hard to complete the chain of six States, due to there being only a few Tasmanians working, the scarcity of numbers proved no handicap, as is indicated by South Australia taking second place, with practically two entrants.

The Federal prizes for the two best individual scores were won by VK5JA and VK5MH, who both scored exactly the same number of points—a thing unheard of previously in this type of contest. Great care was taken in checking these two scores, but a tie was the only possible verdict.

The condition of the logs showed some improvement, but several were very poorly compiled, which made the work of the judges very hard.

Despite the summer QRN, etc., the contest was a great success, and the leading stations at least showed that they could handle traffic in a capable manner in bad conditions, and after all we amateurs must operate our stations at all times.

As was previously mentioned, the rules appeared to give every satisfaction, the six point idea and limited number of the team making this relay contest one that can act as a model in future.

The aggregate points for the outright winning State were advanced a further stage, and show Victoria 14, South Australia 10, New South Wales 9, Queensland 7, Western Australia 2, Tasmania 2.

Totals of five leading stations (or up to that number) in each State:—

Victoria	2206
South Australia	2159
New South Wales	1698
Western Australia	1643
Queensland	1401
Tasmania	397

The leading ten stations of the Commonwealth:—

*VK5MH	993
*VK5JA	993
VK6SA	787
VK3RJ	745
VK6MN	657
VK2BP	620
VK3ZC	601
VK4EI	588
VK3GQ	514
VK2KJ	447

\* Tie.

Full scores of all competitors:—

Victoria—

VK3RJ	745
VK3ZC	601
VK3GQ	514
VK3KO	307
VK3HE	39

South Australia—

VK5JA	993
VK5MH	993
VK5LD	173

New South Wales—

VK2BP	620
VK2KJ	447
VK2OA	276
VK2DR	236
VK2YC	119
VK2ZV	97
VK2YB	90
VK2XV	67

Western Australia—

VK6SA	787
VK6MN	657
VK6FO	199

Queensland—

VK4EI	588
VK4AW	378
VK4JO	220
VK4US	215

Tasmania—

VK7JB	269
VK7XL	128

### NEWS FROM FEDERAL HEAD-QUARTERS.

By G. B. Ragless, FPO.

By the time this appears in print the 11th Annual Convention of the Institute will be a matter of history, and we anticipate interesting history. Over 30 items from five States were placed on the agenda, which must be almost, if not, a record number. Unfortunately items from some States were received long after the closing date, but these were included although this gave less time for the members of the Divisions to direct their delegate.

An application for W.A.C. Certificate was received from Mr. P. J. Anderson, VK3PA, which was approved, and he will receive the award from IARU. Mr. Anderson waited five years before applying for the award after he worked all Continents!

## Modern Monitoring

---

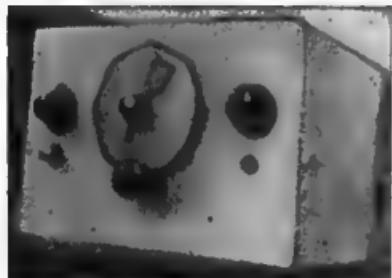
By C. Woodward, VK3YO.

In nearly every amateur C.W. station there is some sort of shielded arrangement which serves the purpose of monitoring the transmitted signal, and, at the same time, gives an approximate check on the frequency.

During the past year or so, however, many amateurs have built the new well-known electron-coupled frequency meter and combined monitor; the circuit of which is shown in Fig. 1 for reference.

The trouble with these F.M. monitors is that, particularly on 7 m.c. and 14 m.c., when the oscillator and/or doubler stages of the transmitter are running, the signal heard in the monitor is almost as loud as when the P.A. is keyed.

A glance at Fig. 1 will show that the detector circuit is untuned. The signal voltage in the headphones is produced by the input to the detector from the E.C. osc., coupled with that from the transmitter osc.



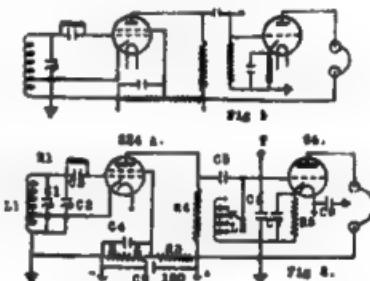
Without going into reasons why, a fairly average signal is being maintained even with the P.A. keyed.

Now, if we roughly tune the detector input circuit to the frequency being used, we will get a much louder signal in the 'phones when the key is down, as the tuned circuit will reject, to a certain extent, the signal from the osc., which is on a different frequency.

This tuned circuit is made by means of a fixed air condenser and a tapped coil, with a switch to change the tap on the coil, depending on the band being used.

Apart from the tuned grid arrangement, the circuit is conventional, and hardly needs explanation.

The improved version of the F.M. Monitor is shown in Fig. 2.



# Electron Coupled Detectors

By G. Glover, A.M.I.R.E.

In view of favor shown E.C. regenerative detectors of late, and difficulties encountered when employing directly heated tubes, the advantages to be gained by using circuit depicted in Fig. 1. are readily apparent.

The entire inductance is wound on one former in same manner described in previous article by the writer (Balanced E.C. Oscillators, "A.R.", August, 1934, page 6). In the article referred to, coil values were given in terms of percentage of entire inductance. However, for the sake of cut-and-try members of fraternity, a different and more detailed explanation will be given here in view of greater space available.

In normal E.C. detectors or oscillators, one-third of total turns of coil are included in cathode circuit. Now, owing to the fact that length/diameter ratio of coil is doubled by virtue of double winding, the percentage of turns included in filament legs must be increased to forty, which corresponds approximately to increased turns required to give same inductance with increased length/diameter ratio. Naturally, it is a different story if grid portion of coil is space wound to increase efficiency, when percentage must be readjusted to fall in line with altered values of length/diameter ratio.

The capacities connecting two coils in parallel are 0.1 mfd. non-inductive type and have the advantage that reactance decreases as frequency increases and maintains, in conjunction with coils, whose reactance changes are diametrically opposite, reasonably constant efficiency over entire operating range.

Now for some useful operating data:-

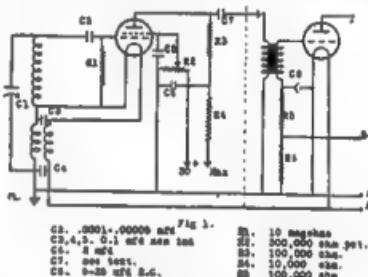
Firstly, fringe-howl may be cured or adjusted to optimum smoothness by selecting correct values for C2, R1 and percentage of turns in filament section of coils.

Secondly, any form of pre-R.F. coupling may be employed, which naturally should be designed to give

maximum efficiency with R.F. tube used.

Thirdly, de-coupling condenser and resistor C6 and R4 respectively are essential if hum is to be reduced to minimum.

Fourthly, value of C7 is really determined by form and value of coupling unit components, and therefore no value is specified in legend. To those readers who favor choke/capacitance coupling, the writer recommends the use of step-up transformer with



one end of primary earthed and the other connected to suitable value of C7, with 100,000 ohm. decoupling resistor and electrolytic condenser connected to secondary return circuit as shown in second portion of diagram. Value of R6 will naturally be dependent upon total current consumption of all tubes, and is determined by use of ohms law treating required bias voltage as "E." By the same token, value of C7 in this will be determined by type and make of transformer used.

In conclusion, writer would suggest that those readers who wish to couple detector directly to aerial (bad practice at any time) should wind a few turns over earthed end of coil to serve as aerial coupler, choosing number of turns which will not cause aerial resonance in band over which coil is designed to operate.

Although band-spreading tuning system is not shown in diagram, for the sake of clarity it is essential, particularly if detector is to be coupled directly to aerial.

AUSTRALASIAN ENGINEERING EQUIPMENT CO.  
PTY. LTD.

"Evans House," 415 Bourke Street, Melbourne, C.1.

# TRANSMITTING CONDENSERS HIGH VOLTAGE

## Paper Dielectric—Wax Filled T.C.C. CONDENSERS

T.C.C. High-Voltage Transmitting Condensers have been used practically exclusively by the "A" and "B" Class Broadcasting Stations throughout Australia, and also by all the leading Amateurs.



Type No.	Capacity.	Height.	Width.	Thickness.	Working Voltage D.C.	List Price.
121	.00025	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1500	12/1
121	.002	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1500	17/11
101	1 mf.	5	2 $\frac{1}{2}$	1	800	18/6
101	2 mf.	5	2 $\frac{1}{2}$	1 $\frac{1}{2}$	800	24/6
121	1 mf.	6	2	1 $\frac{1}{2}$	1500	24/6
121	2 mf.	6	2	1 $\frac{1}{2}$	1500	37/-
141	1 mf.	6	6	2 $\frac{1}{2}$	2500	76/6
141	2 mf.	6	6	2 $\frac{1}{2}$	2500	136/-

## Burnbach Insulators

### Transposition Insulators

All Wave Reception demands a good antenna system. Better Signal Strength and less noise from man made interference, was the goal of the Burnbach Research Engineers when they devised this insulator. Type No. 456 lists 2/-.

### Stand off Insulators

They are made in two different sizes:- 1 $\frac{1}{4}$ " High 1 $\frac{1}{2}$ " Base 1in. High 1 $\frac{1}{4}$ " Base.

These Insulators are made of white Porcelain fitted with Hardware all brass nickel plated. List Price 1/8 and 1/2 Respectively.

### Other Types of Feed Through Insulators in Stock

#### FINE GRANULE MICROPHONE CARBON

We have small supplies of this carbon in stock, of the Polished Granule Type which we can sell to amateurs only at 12/6 an ounce nett.

## Aerials

---

### HOW LONG IS YOUR AERIAL?

By Norman Cameron, VK3PG.

The following method of cutting the radiating part of a tuned-fed aerial system to the correct length may be of passing interest to those hams not possessing an R.F. meter. With a reliable P.A. (or oscillator, where only a single tube is used) plate current meter, a good dial on the feeder tuning condenser and a little care, the job can be done to within an inch or two. The method used here will be described, and those interested may modify the directions to suit their own case. We will consider that we are going to operate on that popular animal, a half wave zepp with quarter wave feeders.

Couple the feeder inductance loosely to the transmitter, and tune the system to resonance, taking care, of course, that the transmitter is operating on the frequency on which highest efficiency is desired. The plate current meter was used here as an indication of resonance, and, provided loose coupling is used, a very accurate reading can be obtained. Take a careful note of the dial reading of the feeder condenser.

Now lower the system, and remove the aerial from the live feeder. Then insert insulators between these. Strictly speaking, these insulators should be exactly the same as those at the free end of the aerial. Now pull up the system to its usual height, taking care that the feeders are in their normal position, both in relation to each other, and to nearby objects.

Duck into the shack and go through the tuning procedure again. If resonance is obtained at the same dial setting of the feeder condenser, you may thank Hertz, for your aerial is exactly the right length. Should it be necessary to decrease the capacity of the condenser, you must add to the length of the aerial, and vice versa. The theory is, of course, that your feeder system is tuned to exactly one-half wave, and the addition of another half-wave (in this case the radiating

part) will not alter the point of resonance. The aim now is to add (or subtract, as the case may be) to (or from) the length of wire in the flat top until joining the feeder to the flat top makes no difference in the point of resonance at the desired frequency.

Country hams in particular, who have cut their aerial according to the formula in the book of words, will, in most cases, find that their aerial is too short. The handbook figures are prepared under average conditions in U.S.A., and take into consideration conductors and poor dielectrics in the aerial's field that do not exist in the case of an aerial well aloft in some of the great open spaces in Australia. The wire gauge will have an important bearing on the length, and it should be stressed that stranded wire is undesirable. Soft, drawn, stranded wire will, unless it is unusually heavy, stretch and keep on stretching; individual strands break, and, in the case of bare stranded wire, each wire becomes partly insulated from the others by corrosion. The result is that the wire changes its characteristics considerably.

---

### FURTHER NOTES ON DOUBLETS

---

By Don B. Knock, VK 2NO

Dear Sir, — Following on my comparison concerning doublets and "zepps" in your excellent November issue, the additional observations herewith may be of some use and interest.

One big advantage of the twisted feeder doublet is an obvious one, but one not likely to be apparent under first consideration. When using the usual "zepp" with feeders spaced six inches or thereabouts, reception can be very annoying during windy days, if this aerial is used for the purpose. If a limited number of spreaders is fitted in these feed-lines, as is the case with most amateur systems, even slight swaying between the lines will turn a rock steady T9 signal into a

wavering, dancing semblance of the original signal. The remedy, of course, would be to use extremely loose coupling to the receiver, and to use an abundance of spreaders at very frequent intervals, say, six inches. It is not always possible to strain feeders very tightly.

There is no such disadvantage with the twisted feeder doublet used for reception, and it goes without saying that the same applies to transmission. Everybody knows what vibrating feeders on a "zepp" can do to a self-excited rock steady signal, but with the twisted feeder doublet there is no possibility of such variation. I find that some amateurs try tuning the feeders in a twisted line doublet. This simply undoes all the efficiency, and raises the impedance of the line considerably. Others say that they cannot get the doublet to draw current properly. This is merely an instance of incorrect coupling, and possibly incorrect length in the flat-top. The coupling must be near the "cold" end of the tank, and in a push-pull tank at the centre. No more than two turns are needed.

Regarding twisted feeder lines, possibly some "live-wire" manufacturer will have the good sense to turn out some special low impedance cabling similar to the Lynch material obtainable in U.S.A. The Lynch cable is marked at each foot of length, which saves a lot of trouble where a measured length is required. In the meantime, 14 or even 16 V.I.R. is quite good, and is cheap enough. Lamp cord is O.K. for inside systems, but out of the question exposed to sea air.

[Flex type feeders have proved especially valuable on 28 mc for receiving. Spaced feeders gave a misleading swinging effect, which was overcome with twisted feeders.—Technical Editor.]

It is the **PLAIN DUTY** of every member of W.I.A. to support the advertisers in these pages, and when doing so **MENTION "Amateur Radio"**. Not much trouble to **YOU—but it means a lot!**

## BOOK REVIEWS.

By the Technical Editor.

(Recent imports of McGill's Agency, Elizabeth Street, Melbourne.)  
**Cunningham-Radiotron Tube Manual, 1934 Edition.**

Probably one of the most handy manuals belonging to a ham's library could be the Cunningham-Radiotron Manual, wherein lies a wealth of invaluable information on the characteristics and applications of every RCA tube in general use to-day. This book of 154 pages not only deals with curves and characteristics, but explains the operation of every tube listed, showing suitable circuits and base connections. For the experimenter who wishes to know one thing about any one tube, we highly recommend this manual, which is selling at 2/-, with postage at 8d.

## The Radio Amateur's Handbook. Twelfth Edition.

Again, in the capable hands of our Australian-born ham, Ross Hull, as editor of the hams bible, the ARRL has succeeded in turning out a completely revised manual. The twelfth edition is something entirely new, in that all the equipment described in the more recent issues of QST; especially the ultra High Frequency matters. The usual elementary chapters are retained, of course, as are those dealing with operating and general procedure.

The remaining chapters could only be described as containing "good, solid dope" brought right up to date, and suffices to meet every ham requirement from the flea-power man up. It goes without saying that a ham would be lost without his "bible," and all those possessing previous editions are well advised to modernise themselves with this 7/6 investment.

## Harmonic

2HZ (Bill Moore) will shortly be packing his swag and getting under way to the Fed. Convention in Tasmania, which he will be attending as the official delegate from the A.R.A. In order to ensure his prompt and sober attendance at the deliberations, 2FQ (Jack O'Dea) has volunteered to accompany Bill as a visitor. Now we want some one to go and keep an eye on Jack.

## VEALLS announce HICKOK RADIO METERS

Laboratory Accurate, Acknowledged  
as the highest standard of quality by  
Amateurs and Radio Fans in  
America to-day.

Obtainable at Vealls for prices  
far below the average cost

### MODEL 46 DC INSTRUMENTS

D'Arsonval Movement

Milliammeter, Ammeters, Microammeters,  
Galvometer, and Voltmeter [Resistance 1333  
ohms per Volt]

FROM £3.5-0

### MODEL 47 DYNAMOMETER AC INSTRUMENTS

Covering the same range as 46 Type

FROM £3.5-0

### MODEL 47T Thermo. Type Instruments

### MODEL 47X Rectifier Type Instruments

Also ANALYSERS, OSCILLATOR  
and TUBE CHECKERS

Write for Illustrated Price Lists  
and full Particulars

## VEALLS

243-249 Swanston St., Melbourne  
168 Swanston St., Melbourne  
299-301 Chapel St., Prahran  
3-5 Riversdale Rd., Camberwell  
Cent. 3058 (6 lines), 10524,  
Wind. 1605, W 5160.

## Station Description

Continued from Page 7

though only a half-wave high aerial  
will overcome the location difficulty.  
The best type of radiator by far, and  
which is being used at present, is the  
doublet, similar to that described by  
2NO in a recent issue of "A.R." An-  
other doublet is being used on 28mc.  
with great success.

The receiver is quite standard, and  
its superhet. action has proved it to be  
of exceptional value on 28 mc.,  
where the gain is high even though  
the selectivity is a little too great.

The majority of VK3ML's ham  
activities are devoted to W.I.A. and  
R.A.A.F. duties, which leave precious  
little time for DX.

Correspondents are again reminded  
that notes must reach the Magazine  
Secretary not later than the 18th of  
the month.

Notes from Mallee and Northern  
District, South Australian Division  
and A.R.A. Zone 10B and Lakemba  
Radio Club arrived too late for in-  
clusion in this issue.

We don't want to leave any notes  
out of the Magazine, so please try  
and get your dope into us in time.

## Quartz Crystals

Accurately cut and ground from the  
finest quartz.

Guaranteed to be cut properly with  
regard to the Optic axis.

200 Mx, 160 Mx, 80 Mx, £1.  
40 Mx, £1/10/-.

Every Crystal guaranteed to give  
maximum output.

Blanks for any band, unground, but  
guaranteed to be perfect oscillators,  
7/-. Special quote for quantities Oscil-  
lating Blanks, 10/-.

Obtainable from  
**P. R. WATSON**  
(VK3PY), Box 49, Warracknabeal,  
Victoria.

# Operating and Experimental Section

Conducted by VK3WY.

**DX Conditions.**—Conditions on 7 mc. and 14 mc. seem to be much the same as last month. From local observations, conditions are as follow:—

7 mc.—This band is fairly consistent for DX at present, the early morning being the best time of the day. From about 0300 to 0630 seems to be the peak period for European DX. During this period the Europeans reach quite good strength, and are not very difficult to raise; the few South Africans which may also be heard at this time are a far more difficult contact.

From 2000 to 0100, W, X, VE, and K6 are the easiest DX, and from 2200 to 0100, KA, J, and OM signs are numerous.

14 mc.—This band is still holding up well, fb DX being worked during the evenings. From 1900 to 2100 the South Americans are fairly consistent, and from about 2200 to 2400 the DX becomes fairly general, after which it fades out fairly rapidly. Some of the countries which have been worked on this band lately are: VP5, VU, SU6, FB8, OA, PA, EA, ON, CX, D, G, LY, etc. The peak period on this band seems to be getting earlier, and if conditions follow last year it will continue to get earlier until it will be about 1500 to 1600 in March and April.

**Australian W.A.C. Record?** — VK3JJ made W.A.C. in very good time the other night, and we should like to know if this is a record for making W.A.C. All contacts were on 14 mc., the first QSO commencing at 2205 and the last ending at 2356, thus making the total inclusive time for the W.A.C. 1 hour 51 minutes. The stations worked were OA4AA, SU6HL, VK3MR, VU2JP, VP5PZ, and PA0CE. These contacts took place between the times stated on 3/1/35. Can anyone beat this very fb effort?

While we are on this subject, who has got the record for W.B.E.? Let's know!

## 28 and 36 MC. SECTION.

(Conducted by VK3JJ.)

### Notes from VK2YC, VK4BB, and VK6SA.

Definite indications of a lengthened skip appeared on 28 mc. towards the end of December, and although conditions were variable, some outstanding results were obtained.

ZL1BA heard VK6SA, QSA5 R5, several times on December 23, but was unable to QSO. Several VK3's were on most of the day, but neither of these stations could be heard in Victoria at the time.

VK4BB and VK6SA endeavored to handle some six point relay messages, but QSB was too bad. VK2HY and VK5XU were QSO shortly after midnight on one occasion, but before 1 a.m. 3BQ, 3WC, and 3JJ joined in and worked four-way with 2HY. A phone station sounding like VK2PS was heard

in Victoria at the same time, but appeared to be working someone on 7 mc.

VK6SA has worked 3WC, 3JJ, and heard 3CW as late as 21.00 E.S.T., but these conditions only lasted two or three nights. VK7NC and VK7KV are the only Tasmanians on 28 mc., and had several VK3 contacts on December 29. 7KV reported first hearing an over-tone of 3JJ on 14 mc., and promptly QSY'd! After much trying, 2HY hooked up with 6SA on December 30, and 4BB heard phones from 6SA the previous afternoon.

There seems to be very little activity among VK5 Hams, but VK5LB has now tuned down and has worked VK2HZ and VK2LZ. The latter is anxiously awaiting the W's, which are expected to come through in March if conditions are anything like those of 1930!

ZL1CD has reported having heard VK3CW, R8/9, and VK3TY R4. ZL1BA complains that most VK's don't seem to listed for ZL's, as they hook up and stay hooked up too long with locals, while the ZL's call and wait! He has heard the following VK's (brackets denote QSO):—VK2LZ, (2NO), (2HZ), 2HY, (2YC), 3ML, 2BQ, 3RJ, 3HK, (3JJ), 3JO, (3WC), 3CW, 3NM, 3WX, (4BB), 6SA, and 7KV.

VK's are not making sufficient use of the schedule, as ZL's find that after ending their 10-minute call at the beginning of the hour, they frequently change over to hear three or four VK's finishing a CQ. More VK/ZL contacts are bound to result if a little more listening were done at the appointed times.

There are a few instances of harmonic reception which suggest likely times for fundamental working. VK2HY heard VU2FP at 19.00 E.S.T. at R6 while the signal on 14 mc. was R4. A listener at Campbelltown who is keen on 28 mc. reports hearing ZS1H R4 on 28 mc. and R2/3 on 14 mc. at the same time. ZS1H was given particulars of our schedules, and has since been heard to mention that he is on with dual transmission, so we are left wondering just which was heard. 3BQ heard two W6 harmonics in the early evenings. JNJ, JAC, XOB, RKC, and one or two other commercial harmonics from ASIA are consistently heard, so that if a few J, VS, XU, and VU Hams would only get going on 28 mc. some good contacts may result.

Many overseas stations are taking a great interest in the R.S.G.B. 28 mc. contest, and ON4AU leads in Europe with 90 points scored by working VE3PT and VE1DR in December.

VE2AC mentions that 28 mc. came good on November 24, and a few (?) of the W's heard on his S.S. super were 9FCN, 9DHH, 9NZE, 9NDF, 9ARW, 4CPS, 4OJ, 6BXL, 6BBL, 9OUN, 9JYG, 9HSJ, 9DO, 2GH, and 7AYQ. It is his most remarkable reception since 1930. He uses an 852 P.A. and will be using 'phone and CW from January. W5ATY reports no signals outside his State for some time, but local work goes on. CX1CG welcomes 28 mc. skeds at weekends.

Continued on Page 21

## Victorian QSL Bureau.

Ray Jones, VK3RJ, QSL Manager.



Cards are on hand at the Victorian QSL Bureau, 23 Landale Street, Box Hill, for the undermentioned stations, and will be forwarded on receipt of postage:—

VK3AY, BB, BF, BL, CF, CJ, CL, CM, DQ, ES, EW, FC, FH, GE, GC, GJ, GM, GU, GW, GX, GY, HE, JK, JZ, LP, LT, LY, LZ, NG, NW, OP, OZ, PW, RT, RW, SK, SN, UJ, WK, WN, WP, WQ, WX, YF, YL, ZK, ZL, ZR, CAREY, HECKER, BENNETT, SUMSION, KELLY.

The annual clearance of the files is to be made during the next few days, and all cards unclaimed will be returned to the senders or destroyed.

Congrats. to Murray Orr, VK3JY, on securing the W.A.C. he has coveted so long. Murray worked the necessary stations long ago, but couldn't get the cards. Yes. Murray, ZSIH's card is now at the Bureau, so you are WBE also. Shoyer's word is his bond with cards.

Will Z. reporting on the Cent Test, says VK's did not make the best use of 14 mc. for East Coast QSO's, as VK2, 3, 4, and 5 were continuously audible between 0630 and 1400 GMT on most days.

The Second International Competition of the P.Z.K. (Poland) took place between December 2 and 16, 1934. Pity our Polish friends did not send earlier notification of their Contest.

My Camperdown correspondent advises that there are good prospects of hearing a YL at the key of VR3GQ in the near future, as Mrs. Emeny is making good progress on the key.

Jack Batchelor, VK7JB, made three attempts to keep Tas. on the map during the recent six point relay test, but RMAX local power QRM frustrated his endeavors on each occasion.

Lon Jensen, VK7LJ, after 12 months of married bliss, has found time to get on the air again. His signals and operating ability have not deteriorated during his absence, nor suffered from his change of status. Welcome back, Lon!

## INTERNATIONAL 28 MC. CONTEST.

The following points were scored during December, in addition to those published last month:—

VK2HY 106, VK3HK 41, VK4BB 45, VK5WC 39, VK6SA 38, VK2LZ 20, VK7NC 18, VK3JJ 18, VK2HZ 14, VK2YC 12, VK5LB 12, VK4XN 9, VK7KV 9, VK3BQ 8.

\* Totals to date.

## British Notes

By G6CL, via G6WY, ZL4AI, VK2HC.

The headquarters of the RSGB convey New Year greetings to your Society, and extend best wishes to your new Executive Officers.

Considerable difference of opinion exists amongst British amateurs in regard to the RST code. To stimulate a discussion, ZL4AI contributed, via G6WY, a letter to the December issue of the T. and R. bulletin, in which he opposed the suggested alterations. The RSGB hope to obtain sufficient information within the next few months to formulate a definite policy. A letter has been sent to IARU headquarters suggesting the National Society should begin to check commercial activity taking place in the frequency channels adjoining our 7 and 14 mc. bands. It is the intention of the RSGB to conduct these checks between the following frequencies—7300 to 7600 KCS, 1880 to 14000, 14400 to 14800. The IARU have also been asked to request members' societies to carry out by annual occupancy checks. The sixth RSGB check showed 548 stations working in the 7 mc. band, and 250 in the 14 mc. band. A total of 715 calls were logged during the checks, which took place during the first four Sundays in September.

The official total of full licences issued to November 30 was 1451. At the same time there were 943 artificial aerial licence holders. These figures show a nett increase of 104 and 42 respectively over the last six months.

The RSGB membership during the same period increased from 1980 to 2245. The grand total includes 498 overseas and foreign members.

Conditions for DX on 2.5 mc. have shown a remarkable improvement. G6RB winner of our recent 8.5 mc. contest has worked over 50 East Coast W and VE stations, and has been heard by a VE5. Schedules with VK and ZL are looked for.

The international contest, as far as Great Britain is concerned, continues to be a washout. Our 28 mc. RES group members are, however, pleased to hear of the recent VK and ZL successes, and look forward with contact with U.S.A. early in the New Year.

It is my pleasant duty to record that Mr. H. A. M. Whyte, G6WY, has been appointed ELS supervisor. The excellent manner in which ELS traffic is being handled by him in collaboration with ZL4AI, ZL3AN, VK2HC, VS6AQ, ZSIH, SULEC, and VE2CA, is arousing much admiration over here.

Note: G6WY advises that G2HG, the originator of the 28 mc. contest, heard AVE on 28 mc. on Christmas Day.

The 1.7 mc. contest was well supported, but no unusual DX has been worked on this band. It is, however, on 3.5 mc. that astonishing results have been obtained recently. G6RB reports working over 50 North Americans in ten days, which follows on the news that G5VL and VE1EI have been in regular telephony communication on eleven evenings during January.

## Divisional Notes

### Association of Radio Amateurs (N.S.W.).

#### NOTES FROM HEADQUARTERS. By VK2HZ.

2FI, zone officer from Zone 7, is at present in Sydney holidaying. He spent a few days with the Wyong gang and has not been seen since.

2FQ was recently elected to the A.R.A. Council again in the place of 2GS, who is working in the country. This is 2FQ's second term on the council, as he previously had to give it up owing to pressure of business.

The December meeting of the A.R.A. was well attended, and the debates concerning the Federal Convention Agenda were very lively.

9NW, 2EO, and 2WW were visitors. 9NW recently returned to Rabaul, before which he was given a small send-off by the North Shore Hams, 2WW, 2HV, 2LZ, 2VQ, 2BA, 2DN, 2AB, 2HZ, 2YC, and 2XC being present.

Congratulations and good luck are extended to 2ZW, Stan Grimmett, Zone 4 Officer, in his venture into matrimony on February 12.

The entries in the Interzone Contest were greater than anticipated, and it proved quite a good success. Results will be announced at the January meeting of the A.R.A., and in March issue of this magazine.

The R.I. is making it his business to check up the input of amateur stations in N.S.W. Some have been visited already.

Conditions in VK2 over the last two months have, to say the least, been peculiar. Every band, excepting possibly 80 metres, has not been behaving normally, compared with previous years. 20 metres is very patchy, 40 metres at night practically useless, while 10 metres has been doing things that no gentleman would possibly think of doing.

Sympathy is extended to Zone Officer 2BP in his recent sad bereavement, the loss of his father.

#### THE A.R.A. INTERZONE CONTEST.

The following are the results of the first Interzone Contest, and taking them on the whole the support was very fair. As in all contests of this nature, the number of logs forwarded to the judges was out of all proportion to the number of participants.

The winner is 2KR, of Gunnedah and Zone 2, a QRP merchant whose power is regulated by the 220 DC mains, and wins the 210.

Second is 2BP, of Hazelbrook, Zone Officer for Zone 5, and wins the 59.

Both these Hams put in very good work, and must be congratulated on the enthusiasm they showed. A special prize was donated by 2VG for the leading station in Zones 9 and 10, i.e., the City area, in the form of a crystal. This was won by 2NP, who was well

away from his nearest City competitor.

2OU did very well also and was very close to second man. The following is the score of the first five stations:

Station.	Zone.	Orig.	Relay.	Hand.	Pts.
2KR	2	40	264	185	881
2BP	5	35	231	181	678
2OU	3	40	218	193	669
2NP	9	40	258	3	561
2WW	8	40	173	6	392

Following scores are:—2LY, 323; 2KJ, 168; 2YT, 167; 2ZV, 107; and 2PV, 100.

#### A.R.A. ANNUAL DINNER.

It has been decided to hold the A.R.A. second Annual Dinner at the Dungowan Cafe, Martin Place, on Thursday, February 21, 1935, at 8 p.m. Tickets are 3/- each, and are available from R. H. W. Power, Wembley House, Railway Square, Sydney, or ring MA 2377, and everyone is welcome. Please book early.

#### A.R.A. JANUARY MEETING.

The above was held at the Y.M.C.A., Pitt Street, and from the outset the discussion centred around the agenda paper for the forthcoming Convention. Each item was fully discussed; but generally speaking the meeting supported each item as set out by the various divisions. 2FI, Zone Officer of Zone 7, was present as a visitor, and also 2VM and 2FK.

#### ZONE 2 NOTES.

Z.O.—2HV.

VK2RV is using an electron-coupled receiver, and finds it preferable in every way to the autodyne; the transmitter set up is now 46 osc. and F203 PA. When on phone the F203 is used to modulate the 46, and an input of 4 watts is used. Ron will be off the air for about three weeks, as very QRL with exams. When they are over, however, he expects to take advantage of his 25 watt permit, and then for QRO. VK2NF has still not been heard, and no dope to hand on his doings.

VK2XQ, the old John, late of Quirindi, after three months without bounding the brass, is back in Zone 2, and this time, we hope, to stay. John is now WAC, or will be if OA4Z QSL's. Don't worry, John; he will. The new QRA is Box 2, Walgett.

It is very doubtful whether VK's 2HC and 2CR are still braving the QRN on 80 metres or off the air. So far this summer they have not been heard on 40 metres.

The following are QRT:—VK's 2BE, 2HJ, 2KN, 2UR, 2WT, 2NA, and 2JF.

VK2ZP has made a New Year resolution to QSL. Well, this will sure be a novelty for Arthur. T.R. reports are still received on the Hartley and 210.

Mac, of VK2ZH, was QSO VK2HV a few weeks ago, and his sig. sure had some wallop for 4 watts.

The Gunnedah QRP King, VK2KR, has a nice new card. Cess always QSL's gang, so look out for him on 40. VK2HV has given up DX chasing for the time being, and is building new Xtal rig—47 CO, 59 multi-doubler, and parallel 210's PA, input to the final stage will be 12 watts.

Bill Picknell, the second op. of VK2HV, had a very wild time whilst in Sydney for the Christmas holidays. We have it on good authority that three gallons of beer were consumed on the train between Inverell and Sydney. Bill is secretary of Lakemba Club, and when not QRL painting, spends his time planning to make the Club's Annual Reunion a success. Will those members of Zone 2 mentioned above, whether QRT or not, please send in some dope to VK2HV by the 10th of each month? The QRA is Byron St., Inverell.

Cess, 2KR, of Gunnedah, the winner of the A.R.A. Interzone Contest, is to be congratulated, especially as he has a very limited power owing to having to use 240 DC mains. AC is shortly to be installed, so that the 210 prize should come in handy as a PA tube.

2ZH is also in Gunnedah, at "B" Class Station 2MO; but is QRL work and only makes an appearance occasionally.

#### ZONE 4 NOTES.

#### NEWCASTLE AND DISTRICT A.R.A.

The Newcastle gang have now settled down in their new clubroom in the Sun Building, and the weekly meetings are well attended. Theory classes for AOPC aspirants are being arranged for early in the New Year.

Congrats. to Jim, 2ZC, on the arrival of a second op. 2UF has been working Europeans on 20 metres and threatens to rebuild. What, again? 2MT has also been amongst the DX on this band, as well as on 40 metres. He recently earned his WAC on 40 metres. 2FN has a nice looking Xtal rig (2 stage), and gets good reports from Yanks. 2KB is not at all pleased at having his call taken for BCL purposes. He has been allotted 2YS, and is rebuilding his QRO rig. 2ZW is not heard much these days. 2RG had his cousin, 2BG, from Epping, staying with him at Christmas. 2BG says 2RG's effort in climbing 60 feet up a tree and hanging from a branch by one arm while he tied the aerial on with the other, would have put Tarzan to shame. 2SO still going with MOPA on 80 and 40 metres.

The Club is arranging a local DX contest early in the New Year. Handicapping will be by a novel method—using the db unit, which should be fair to everyone.

#### ZONE 5—A.R.A.

Zone Officer 2BP complains bitterly of the terrible conditions and terrible QRN that was prevalent during the Zone and Fisk Contests. After a lot of preparation, rebuilding and writing messages, QRN was so bad that continuous operation was impossible. Activity on Zone 5 is on the wane, and 2BP is the really only very active Station.

2NS has been heard on various bands at various times, and was recently in V.I.S.

2RJ seems to be conserving his energy for the coming winter, and 80 mx. telephony.

#### ZONE 7—A.R.A.

Zone Officer 2FI is in V.I.S. holidaying; but is unable to compose any Zone Notes. Some of the V.I.S. gang don't seem too composed when they see 6ft. 7in. and 20-stone coming into their shacks.

#### ZONE 8—A.R.A.

Z.O.—VK2OJ.

2YI still at Girral and heard working from 2FI. Athol is on holidays in V.I.S. 2QD came back for Christmas, and is going to give Ham Radio a rest. He is living in V.I.M. Two more prospective Hams sat for their AOPC recently; but the result is not to hand. 3EG also on vacation in V.I.S. Ivan has a 203A in PA now, and says it's fine. Lately using untuned feeders on the Zepp at 20J, with good success. Two turns are coupled near the earth end of PA tank coil. Faders are spaced 2 ins. The adjustment is fairly critical, but when correct it works nicely. The arrival of a junior op. will no doubt keep 20J QRT for a while.

#### ZONE 10 (A)—MAROUBRA.

Z.O.—VK2XV.

Christmas is over and everything settling back to normal again. DX wasn't so plentiful as would be expected over the festive season. Guess everybody was imbibing freely of "Christmas spirits." Hi!

VK2WJ and VK2XK have started on pastures new and have lowered themselves to the U.H.F.'s, and have started operation on some high power 6 mx. equipment. So stand by, everybody. (Hi!) Ten metres has been investigated recently here also. VK2FQ still. QYL, Jack is studying for "Commercial op." Best of luck, Jack, in next exams. VK2XV has been working a few on 14 mc.; but 7 mc. has been very dead the last month, a few W's filtering through late in the evening.

Europeans have been very patchy and hard to hold down lately; but one or two nights last week made up for quite a lot of the past month. VK2XV worked five Continents in three-quarters of an hour. Nearly W.A.C. not bad. Hi! Europe, North America, South Africa, South America, and Australia.

VK2FK, of Randwick, rallied round and let me have a few details regarding the Randwick crowd, and I will take this opportunity of thanking him.

VK2WN, Randwick, considering building a new Xtal rig using 46's, with modulation. VK2SB blows 280's like P. lamps. Seems to do in a couple of 280's just to show visitors what he can do. Whasamatter!!? Bill has a very nice Xtal QRL???

VK2QM using E.C. oscillator and 46 PA. How come, Cec.? Thought you swore by Tri-tets. Believe Cec. dreams of RK2Y's, etc. Well, you may see one shortly, if you know the Maroubra gang, Cec. OM. (Hi!)

VK2OH works a few Yanks; but conditions very crook on 7 mc. Why don't you QSY to 14 mc., Bruce? He's also QYL, they tell me. 2CG putting out some good fone with two-stage Xtal rig—thinking of building an Xtal mike.

2HP, "the noise of Coogee," is building a S.S. super. Hope it pans out O.K., Harold.

## Victorian Division

### KEY SECTION NOTES.

By Peter H. Adams, VK3PX.

The usual monthly meeting of the Key Section was held at Institute Headquarters on January 10. There was an attendance of 32 members, and as VK3OX had to leave early, the chair was taken by Mr. Jones, VK3RJ.

VK3JJ addressed the meeting, and explained the rules of the ten metre contest which was announced in last month's issue.

QSL cards were distributed by VK3RJ, and B.E.R.U. contest rules and log sheets were given out to those interested.

VK3JJ brought along to the meeting a ten metre oscillator, and it was expected that a fair number of chaps would bring 28 mc. frequency meters for calibration. However, the response was very disappointing; apparently of those who had expressed their intention of bringing meters to the meeting some had found the band and others had simply forgotten about it. As there was no further general business, the meeting was closed and those present engaged in the usual general discussion.

In the past it has happened that someone present at almost every meeting has had some interesting talk to give. The idea of arranging a definite roster of lectureres has been discussed at previous meetings, but nothing definite has been done. However, it is felt that it would be much more satisfactory if members could know for certain that a talk or short lecture on some interesting subject would be given at each Key Section meeting, and the secretary will endeavor to see that this is arranged. There must be plenty of members who could give a short talk on some subject of interest to them. It need not be too technical and there is no need to be worried because you may think that the other fellow knows more about it than you—even if one knows almost all there is to know about a subject, it's always worthwhile and interesting to hear the other chap's views. So any members of Key Section who can talk for, say, twenty minutes, on some interesting topic, please get in touch with VK3PX, Windsor 3612, or at the next meeting. In the meantime, a lecturette has already been arranged for the February meeting; but, of course, convention delegates from some of the other States may be in Melbourne on their way home then, and if the meeting proves a particularly lengthy one the talk will be held over till next month.

Conditions on 28 mc. for the first Sunday of the contest seemed poor in Melbourne. A number of locals, including 3JJ, 3WC, 3NM, 3BQ, 3JZ, 3OF, 3XK, and 3PX were on most of the day, but apparently no DX or interstate QSO's resulted.

It will be noted that the rules for the B.E.R.U. contest in February have been considerably altered. The alteration in time from the whole 48 hours in each week, and to 12 hours from 0300 Eastern Australian Time Sunday to 0300

Monday should be very popular, and, as it will now be possible to get a reasonable amount of sleep on both nights of the week-end, should induce many more to enter. The old idea of keeping awake and on the job for 48 hours continuously, and then going to work in a stupor on the Monday savored too much of an endurance contest. Having the high and low power contests on alternate week-ends is another step in the right direction. It evens up conditions for both contests, and makes things much easier for those Hams who are bothered by YLS! There's no reason why every member of the Key Section should not be in it this year. Let's go to it, chaps!

### PHONE SECTION NOTES.

By J. R. Kling, VK3JB.

As there was no meeting of this section held during December, owing to the Christmas holidays, the allocations given by the Allocation Committee at the November meeting are being carried through till the end of January.

1935 seems to have started very well, as there has been a lot of activities amongst the gang, and many courtesy calls have been paid to various stations already by different members of the Section.

Many stations are rebuilding, and it seems that 1935 will eclipse all previous years as to the efficiency of the transmissions from the many metropolitan experimental stations, who already put out good quality transmissions, but are still trying to improve them by making alterations.

Stations are installing all the latest equipment that is to hand, and the result should be better transmitters, better transmissions, and better 'Hams.' Yes, fellows, let's all make this a bumper year, with better activities in the Institute, more new members, more friends, more helping each other, more inter-section social activities, more enthusiasm, more new "Hams," and, last of all, more thought for the other "Hams" who are out of touch with us in the flesh, but whom we can help over the air.

Some of the allocations were vacant during the Christmas holidays, so some of the boys must have gone away and forsaken the ranks for a few weeks.

### SOME PERSONAL PARS. ABOUT MEMBERS OF THE SECTION.

3CB has been putting over some one-act plays, which came over very good.

3DH has been on transmitting with a remote studio. Too bad you had to cut in on them just at 10 a.m. to close down, Ivor. Hi! What time did they knock off? Hi!

3AM has been off for a while as I believe he is knocking up a new speech amplifier or some part of his gear.

3PA has been heard with plenty of pep lately. What is it, Perc.? Class "BB" now!!! Hi!

3OY and 3OV have been sharing their sessions, and evidently the same crystal, as they were both on exactly the same frequency. Hi! Did you hand it over the back fence, Alan OM?

3BW, Portarlington, has been coming in up here with a wallop, too. You must have a good location, OM.

3FY has been very active lately, too. On early in the morning on Sundays and late week-nights.

## WESTERN DISTRICT NOTES.

30W-3HG.

The main item of interest for the month was a visit by VK3WN from Sea Lake, who was on a holiday tour. Jack had his gear with him and kept in touch with the gang en route.

3PG completed his WAC a couple of weeks ago by working ZSIH on 20 mx. Congrats, OM. A new station, 3WW, has started up in Warrnambool, whilst 3OA has staged a comeback to the air. Wonder how long it will last, tho?

QRN has been fairly prevalent here lately, and not much doing on 7 mc. although 14 mc. is fairly active. Harvesting operations, now nearly over, have, however, prevented much late-night or early-morning work, as after a day in the field there is not much energy left for hunting DX, hi!

VK3JE has returned from a short holiday in VIM. Owing to pressure of service work, Bill finds little time for radio, and has abandoned the idea of using the AC converter. He will carry on with the 230 DC until the supply is changed over to AC from Hamilton. This is expected to take place during this year.

## West Australian Division

By 8CP.

During the past month we have had varying conditions on all wave bands.

Summer time seems to be 40 mx. telephony time here during daylight hours, and some really first-class transmissions are taking place, and long distances being covered on medium power.

6LR, of Northam, has installed a fine outfit, and using an astatic microphone has the best quality phone in VK6. Using his allotted power of 25 watts, with grid modulation, this station can be heard locally every Sunday afternoon.

6RW and 6KC seem to spend the country idle moments testing phone between their stations at Wagin and Katanning. 6CP also puts out some moderate phone on Sundays, and although the quality locally is not so hot, the transmission seems to lose its rough edges after going about 60 miles.

Reports from listeners up to 600 miles away in all directions give indication that the 20 watts to a pair of 6 tubes in push-pull are at least cutting some ether.

Ten metre work is still being carried out by 6MN, 6SA, and 6CP.

DX conditions on 40 mx. are moderate in the early hours of the evenings, and from 11 p.m. to about 4 a.m. some good contacts have been reported by 6CX.

Hams generally are slowly taking a more active part, and most stations can be heard spasmodically.

Stations on the air are: MN, CX, SA, GS, RW, KC, HD, LK, LR, DH, PK, JW, FM, XL, CP, KB. Others are not so prominent, but do come on sometimes.

PK reports a few QSO's with G. and D. in the early morning hours, and KB has been working South Africans.

## ACTIVITIES OF W.I.A.

On a recent Sunday a trip to Yaucep Caves took place, and a good muster of the gang and feminine sup-

porters spent a most enjoyable time.

Another outing has been arranged for Jan. 20 to Penguin Island.

Both outings are the work of the social committee, under the leadership of 6CB.

We regret the resignation of LJ from the Council, and would like to record our appreciation of the solid work done by him in the past. Jack will still continue to be QSL officer, and as he has recently got over his big "A" Class exam, will soon be on the air again.

Under the guidance of CB, who is to fill Jack's place, the Council are looking forward to doing big things.

6BN has the AOPC classes well in hand, and as some of the boys have been up before the R.I. we hope to soon have some more new calls.

Once again, boys, I appeal to you to support your own magazine, and also please let me have those outstanding sub.

The distribution and correspondence costs have to be met, and the margin of profit to play with is small.

## Tasmanian Division

By 7PA.

(Hon. Sec., Mr. H. M. Moorhouse,  
95 Arthur St, North Hobart.)

The January meeting of this division was better patronised than has been the case for some time past, and it is hoped that it is an indication of an improving condition for 1935.

It is not for want of effort on the part of our secretary and executive that we are not making the progress that we should; but it seems that a general lack of interest is at present maintaining.

We trust that the Annual Convention being held here this year will prove to be the turning-point for us, and that we will wake out of a long slumber and burst forth as of past times.

With the membership list extended as it has of late, there is every reason to believe that progress is here for the taking. We have a number of young members who, properly educated in the Ham traditions, should help swell the fold of VK7's.

By the time these notes appear the Convention will have been and gone, and with the programme that has been arranged lasting memories should be with all who were concerned with it, and we hope that those who visited here on this occasion will live to see many more conventions in the future.

There is a move afoot to get the official W.I.A. station on the air under its old call of 7WI, and it is sincerely hoped that, after several previous attempts and failures owing to finance, it will now come into being. Our secretary is very emphatic about it, and is determined to do his bit in seeing it through.

It is proposed to have a 200 meter allocation for 7WI, as well as the usual bands, so that it can keep us in touch with the general public as well.

It is regrettable to note how many of our amateurs at present show so little interest in W.I. affairs, and less endeavor at improving our position; it is easier to moan over the inactivity than to try to help with making it active.

There still exists the same age-old position of unfinancial members—mem-

bers who omit, either by desire or circumstance, to honor their obligation, which makes satisfactory and smooth operation difficult, as finance is essential.

The holiday season now over, much of the general excitement has settled down to routine level; the same few are still active here on the 20 and 40 meter bands. Weather conditions have made the bands very patchy for some time now, but we are looking forward to a stretch of settled weather.

Our hon. secretary is overworked, and 7BJ has accepted the position of aast. secretary pro tem., in conjunction with his other activities. Says he has too much time on his hands. Poor old Joe! 7LJ has a bit more time for Ham work during school recess.

7JH and PA had a trip around the North-west Coast, via Launceston, one week-end in December, and visited several of the Northern shacks. A portable 'mitter was carried on the trip, but there was not time enough to give it a fair trial. VK5 was contacted one evening while on the return trip through the Great Lake Country.

While speaking of portables, VK2SS was worked twice here at 7PA while he was holidaying with a portable rig at Nambucca, N.S.W., and came through with a good strong sig. for a portable.

Continued from Page 15

Scoring 345 points to date in the international 28 mc. contest, VK4BB has presented a knotty problem to other VK's who are trying to overtake him! After threatening to do so since 1928, VK2ZN has come down to 10 mx., and makes other VK's jealous by telling what he hears and the others miss! 3ML and 3OF put up beam antennas directed at N.Z., but the former had the misfortune to have part of his blown down in the recent gales. Comparisons are being made at 68A between the normal 132 ft. horizontal antenna and a small 28 mc. half-wave vertical, both single wire fed. For local work signals are much stronger with the small one, but for Eastern States the reverse seems to be the case, although a really decent test has not yet been obtained.

3BQ, 3OC, and 7KV use 800's as doublers in the last stage and are finding them very efficient when plenty of drive is available. Among the many additions to the 28 mc. gang are 2WJ, 2PS, 3JZ, 3PX, 3XK, 3JK, 5LB, and 6RA, but owing to the poor conditions at present they have not yet had opportunities to properly try out their gear.

## TRADES CRICKET MATCH

The Annual Cricket Match and Sports meeting of the Electricity Supply Authorities versus the Electrical Trades will be held on the Albert Ground, St. Kilda Road, on Thursday, 21st February. Events will commence at eleven o'clock a.m. on that date, and as the event has always been a popular fixture, a large and brilliant galaxy of sparks is anticipated.

## CENTENARY CONTEST.

By Mrs. L. S. Hutchings, VK3HM.  
In the radio shacks and hamlets,  
Dwell the He-men, glad of rest,  
This the tale of the survivors  
Of the great endurance test.

After weeks of preparation,  
Making perfect all their gears,  
Pity a Centenary Contest  
Comes but once in hundred years!!

Hams of all the nations ready,  
Standing by for start of fray;  
Organisation perfect,  
Tribute to the W.I.A.

All the household hushed in silence,  
Even to the old grey cat;  
Great the concentration needed,  
Odds against them to combat.

Four week-ends of battle royal,  
Four week-ends of victories won;  
Elements against them often,  
Sigs. R,2 to maximum.

Working far into the midnight,  
Far into the morning light;  
Of surroundings quite oblivious,  
Revelling in the thrilling fight.

'Long as CQ calls are answered,  
Serial numbers flashing round  
All the world in friendly contacts,  
CQ, VK, welcome sound.

First-aid rendered by the household,  
When tired Nature asserts her  
sway,  
Pots of coffee black and steaming  
Help to keep dull sleep away.

When things slacken off at midnight,  
Great temptation to turn in;  
And you call DX, and calmly  
Go to sleep despite the din.

Have a heart ye chiefs and elders;  
Make it two week-ends next test;  
And we one and all will bless you,  
And go through without a rest.

Epic contest now is ended,  
Miles are totalled, points are scored;  
To the winner, to the loser,  
Comes this knowledge, this reward.

Each has helped to make the Contest  
World renowned; has done his best;  
Good luck to the winning heroes  
Of our great Centenary Test.

NEW!

POWERFUL!

CLEAR!

The Micro-Sensitive  
**RADIOTRONS**

*with 5 great advances!*



The Radiotron Designer's Handbook now available! A comprehensive book prepared expressly for the set designer and invaluable to wireless engineers, experimenters, service mechanics and salesmen. Price 1/- Write to-day for your copy.

1. Quicker start.
2. Quieter operation.
3. Uniform volume.
4. Uniform performance.
5. Every valve is matched.

These improvements mean better performance, full complete tone, wider range and longer life for the same cost.

Have your valves tested by your radio dealer and replace worn-out ones with the new Micro-Sensitive Radiotrons — they will give fresh sparkle to your receiver and ensure more pleasing and enjoyable entertainment.

AMALGAMATED WIRELESS (A'De.) LTD.,  
47 York Street, Sydney.  
167-9 Queen Street, Melbourne.

ASSOCIATED GENERAL ELECTRIC INDUSTRIES LTD.,  
93-6 Clarence Street, Sydney.  
Cnr. Queen and Little Collins Sts., Melbourne, G.I.

**RADIOTRONS**

ADVERTISEMENT OF AMALGAMATED WIRELESS VALVE COMPANY LIMITED.

# R.A.A.F. Wireless Reserve Notes

## SECOND DISTRICT NOTES. By 2Z1.

Activity during the past month has not been so great as this district has become accustomed to, and traffic totals have fallen considerably. However, this is due to the Christmas and New Year holidays causing many members to be away from their homes. Some of the most consistent members in the district are 2A2, 2A4, 2A5, 2B3. The latter will shortly be appointed to the "A" Section, so as to keep the most active members together. It is expected that 2Z2 will shortly be able to keep regular watches again, and this will be most welcome. It also appears likely that 2Z1 will soon be in a position to resume active participation in reserve work.

## THIRD DISTRICT NOTES. 3Z1.

Unfortunately through misunderstanding, and the falling down of the Post Office, VMC has been without Reserve Notes for the last two months. 3Z1 posted December's notes to 1A1 while he was away in the Riverina, and up to the present time they have not come to hand. With regard to January, 3Z1 was under the impression that the notes would not be required until later, because of the holiday period, and that fact, together with the fact that business was inordinately brisk, the matter was left in abeyance to our coat! However, we are right on the spot this month, and full of enthusiasm for the future of VMC, especially in 1935. Although it is a trifle late, 3Z1, on behalf of VMC as a whole, would like to wish all members of the Reserve in Australia a very Happy and Prosperous New Year, and hope that the year will bring forth a stronger and better Reserve in all States.

VMC, especially the metropolitan members, is being greatly troubled with amateur phone stations on 3.5 mc. on Sunday morning schedules. Whilst realising the fact that any amateur is as entitled to the band as we are, we feel a strong animus against the annoying "messing about" by the average phone station using the band on Sundays between 11 a.m. and 1 p.m. On January 6, 3Z1 was trying to copy traffic from a country Section Commander with a phone station right on top of him. This station did not sign in the three-quarters of an hour he was on the air, and whistled a popular jazz tune into the mike for 20 solid minutes. That sort of behaviour not only gives the average amateur a bad name for selfishness, but also seriously interferes with men who are using the band for legitimate experimenting and general work. We are seriously considering the moving of all sections to special reserve bands outside the amateur bands, and if the necessary crystals can be arranged for, the move will be very shortly made.

During the month of February there will be no regular schedules except special section ones, because of the number of stations who will be taking part in the B.E.R.U. contest. The period of Reserve schedules will be spent in well earned sleep by the majority of members, if preceding years are any criterion.

As is usual at this time of the year, conditions have been very poor of late, and country stations fade practically out shortly after noon. The remarkable effect of two stations reasonably close together, with similar powers, having signal strengths of R8/0 and R8/7 respectively, is often noticed, seeming to indicate that the antenna is the secret of successful operation in periods when conditions are poor. VMC is going to do a lot of experimenting in an effort to find the most useful type of antenna for all the year operation on the band we are using. The Reserve offers unique opportunities for testing out any new ideas, as it is possible to amass the same data from reports on one Sunday schedule as an amateur could glean from about three weeks QSO's. In addition, there is the advantage that all the reports are taken simultaneously, and thus a much more accurate result of the test can be made than reports over a considerable period of time. 3Z1 has always thought that members have never availed themselves sufficiently of the wonderful potential possibilities of their organisation for experimental tests.

VMC has a lot of new ideas and plans for incorporating in the work in the coming months, and we venture to say that 1935 will be the most interesting and finest year we have ever had. Incidentally, we have a vacancy for a metropolitan station in one of our sections at the moment, so any amateur desiring to join should get in touch with 3Z1 (VK3UK) as soon as possible. Of course, we are always ready to take in any new country stations, and should a vacancy not be there at the particular moment we can always attach him to an existing section until the opportunity arrives for transfer.

---

## NOTES OF RESERVE ACTIVITIES

## MUST REACH HEADQUARTERS

NOT LATER THAN THE 18th OF

THE MONTH.

## BURNBACH INSULATORS

Attention of amateurs is directed to the advertisement of the Australian Engineering Equipment Co., notifying the securing by that concern, after lengthy negotiations, of famous Burnbach Insulators. This is of great interest to amateurs as these insulators ensure better signal strength and less noise from man-made interference. Other types of feed-through insulators are also in stock.

## HAMADS

3d. per line. Address correspondence to Advertising Manager, "Amateur Radio," 128 Whitehorse Road, Box Hill, E.11.

**MAST FOR SALE.**—41 ft. 3 x 3 Oregon, painted, 8 galv. guys, pulley, halliard, 17/8. XW 1902, 71 Holyrood St., Hampton.

VK3ML's SS six tube superhet is offered for immediate sale at a low figure. This receiver of outstanding performance is complete with coils, tubes and power pack. Greatest signal extractor known. Full particulars on application.

**FOR SALE.**—"ESCO" D.C. GENNY 400 volt, 150 mills., new armature, £5. **WANTED.**—2.00035 or .0005 variable transmitting condensers.—VK3WE, Box 136, BIRCHIP.

**FOR SALE.**—250 watt alternator, 110v. 250 cycle 600/600v. transformer, 300/300v. transformer, with two 5v. 3 amp. windings, 83 rectifier, two filter condensers, £12/10/- the lot.—VK3OW, "Carinya," Coleraine, Vic.

**BRIGHT STAR RADIO VK3UH**  
517 Lower Malvern Rd., Glen Iris  
S.E. 6

Crystals accurately ground from best Brazilian quartz, tested to 50 watts input to pentode oscillator, 3500 kc., 10/-; other frequencies also in stock. Call or write above address.

## 12th Edition Radio Amateur Handbook.

1935

Stocks arrived from U.S.A. this week. Sweeping changes in short wave radio technique have been made since publication of the last edition. These changes have called for a drastic revision of the book. The chapters devoted to apparatus design and construction have been re-written all through, with new illustrations and new circuit designs. Needless to say the new methods and technique which have so recently almost revolutionised ultra high frequency working have been treated in full detail.

**Price: 7/6**  
Plus 5d. postage.

**Q.S.T. for 1 year and  
membership to A.R.R.L.**  
18/-

**SPECIAL OFFER!!!** 12th Edition Handbook and 1 Year Q.S.T. for 24/-. NOTE. If your present sub. to Q.S.T. has not yet expired, we will extend it for a full twelve issues and send you the handbook immediately upon receipt of 24/-.

## McGILLS AGENCY

183-185 Elizabeth St., Melbourne  
(The G.P.O. is opposite)

(Send stamped addressed envelope for our free catalogue of books on Radio, Sound Projection, Flying, Television, Refrigeration.)

# Solving Your Instrument Problems

Amateurs are invited to submit  
their problems to us. Stocks are  
available to meet all requirements.

**SIEMENS**  
**ELLIOTT**  
**BRITISH**  
**Radio Instruments**

**ASSURE**  
**ACCURACY**  
**RELIABILITY**  
**SERVICE**



Stocks of Miniature Instruments for Panel Mounting available in the following types for A.C., D.C. and R.F. Measurements. Moving Coil, Moving Iron, Thermocouple and Metal Rectifier Patterns.

**SIEMENS [AUST.] PTY. LIMITED**

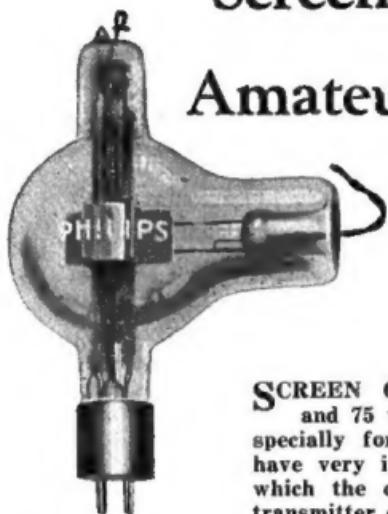
**SYDNEY—MELBOURNE—BRISBANE—ADELAIDE**

**H. C. Little & Co. Ltd., PERTH.**      **F. H. Fearon, NEWCASTLE**  
Sole Agents in Australia for the English Electric Co. Ltd., London

# Screen Grid Valves

For

## Amateur Transmitters



quarter of actual size

Types:  
QB2/75, QC05/15

**SCREEN GRID** Transmitting Valves for 15 and 75 watts have been designed by Philips specially for use by amateurs. These valves have very important properties, as a result of which the construction and adjustment of the transmitter can be greatly simplified. The control-grid and anode of these valves are screened from each other by a screen-grid, thus reducing anode-control grid capacity to a minimum. When used as H.F. amplifier or frequency multiplier in controlled transmitters there is practically no reaction of the anode circuit on the grid circuit, and self-oscillation is impossible with screening outside the valve. Neutralisation is unnecessary, so it is very easy to alter the wave-length at short notice. These screen-grid valves give greater amplification than triodes under the same conditions.

Table A shows the various electrical properties of the Philips amateur transmitting valves:—

### CHARACTERISTICS:

Table A.

Type.

	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage	4.0	10.0
Filament current*	1	3.25
Saturation current*	400	2,000
Anode voltage	400-500	2,000
Screen grid voltage	75-125	300-500
Max. anode dissipation	15	75
Anode dissipation on test	20	100
Max. screen grid dissipation	3	15
Amplification factor*	225	200
Mutual conductance (slope)*	1.4	1.4
Int. resistance*	160,000	150,000
Anode-grid capacity	.091	.02
Max. diam. of bulb	50	100
Max length	160	210

\*Approximate values.

**PHILIPS**  
TRANSMITTING VALVES